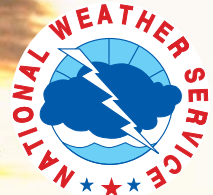
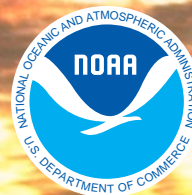


The Convective Watch Decentralization Plan

**Office of Meteorology
National Weather Service**

January 1997



INTRODUCTION

This document provides an initial framework by which the National Weather Service (NWS) proposes to migrate severe thunderstorm and tornado watch responsibility from the Storm Prediction Center (SPC) to Weather Forecast Offices (WFO). The pages that follow provide I. a Background that gives a brief history of events leading up to the decision to change responsibility for severe local storm (convective) watches; and II, the Operations Concept that briefly describes each *Phase* of the Plan and overviews internal/external coordination and service evaluation. The next four sections explain each Phase (I through IV) in greater detail, including goals, training, field test plans, service evaluation, and operations. Examples of products generated by SPC and future WFOs are provided in these sections, as well. Section VII identifies specific tasks and responsibilities. Finally, Appendix A lists the time line for accomplishment of decentralization tasks, and Appendix B outlines proposed forecaster training for the convective watch.

This document should be considered dynamic in nature. Implementation of elements or timetables within this Plan are subject to modification due to advances in technology, changes in availability of required technologies or personnel, or changes in other critical components necessary to accomplish the Convective Watch decentralization.

LIST OF ACRONYMS

AA	Assistant Administrator for Weather Services
AFGWC	Air Force Global Weather Center
AFOS	Automation of Field Operations and Services
AIRMET	Airmen's Meteorological Information
AMS	American Meteorological Society
ATA	Air Transport Association
AWC	Aviation Weather Center
AWIPS	Advanced Weather Interactive Processing System
COMET Training	Cooperative Program for Operational Meteorology, Education and Training
CWD	Convective Watch Decentralization
CWFA	County Warning and Forecast Area
FA	Area Forecast
FOS	Family of Services
GOES	Geostationary Operational Environmental Satellite
HWG	Hazardous Weather Guidance
LDAD	Local Data Acquisition and Dissemination (in AWIPS)
MAM	Mesoscale Alerting Message
MAR	Modernization and Associated Restructuring
MIC	Meteorologist-in-Charge
MSD	Meteorological Services Division
N-AWIPS	National Center AWIPS
NAWAS	National Warning System
NCEP	National Centers for Environmental Prediction
NCO	NCEP Central Operations
NEXRAD	Next Generation Weather Radar (WSR-88D)
NOAA	National Oceanic and Atmospheric Administration
NSSFC	National Severe Storms Forecast Center
NWA	National Weather Association
NWR	NOAA Weather Radio
NWS	National Weather Service
NWSFO	NEXRAD Weather Service Forecast Office
NWSO	NEXRAD Weather Service Office
NWWS	NOAA Weather Wire Service
OM	Office of Meteorology
OML	Operations Manual Letter
PC	Personal Computer
ROML	Regional Operations Manual Letter
SAAS	State Association of ALERT Systems
SAW	Preliminary Notification of a Watch
SEL	Severe Local Storm Public Watch Narrative
SEV	SPC Convective Watch County Listing (Phase I)/Guidance Watch (Phases II/III)
SIGMET	Significant Meteorological Information
SLS	NWSFO/NWSO Convective Watch County Listing
SPC	Storm Prediction Center
UGC	Universal Geographic Code
UTC	Coordinated Universal Time

WCM	Warning Coordination Meteorologist
WCN	Watch Clearance Notification
WFO	Weather Forecast Office
WSOM	Weather Service Operations Manual
WSR-88D	Weather Service Radar 1988-Doppler
ZIP	Zone Implementation Program

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The Convective Watch Decentralization Plan
Office of Meteorology
National Weather Service Headquarters

I. BACKGROUND

The Modernization and Associated Restructuring (MAR) of the NWS integrates a wholesale upgrade in science, technology and personnel with a revamping of the NWS field office structure. The purpose of the MAR is to enhance the agency's ability to fulfill its mission of protecting lives and property. Historically, that mission has involved issuing convective watches. In the scientific, technological and professional environment from the middle 1950s through the early 1990s, the National Severe Storms Forecast Center (NSSFC) performed the convective watch function. Because of the MAR, new technologies including NWS Doppler radar (WSR-88D), an Automated Surface Observing System, a new generation of Geostationary Operational Environmental Satellites (GOES), a Doppler-based wind Profiler, advanced National Centers for Environmental Prediction (NCEP) computer models, and the Advanced Weather Interactive Processing System (AWIPS) will exist at WFOs. Additionally, new levels of scientific understanding, training, and professionalism will exist at WFOs. Incorporating these new resources into the operational field office environment means that the WFO will be capable of providing convective watches for their areas of forecast responsibility. By the end of the decade, the convective watch function will shift to WFOs. This migration of convective watch responsibility is called the Convective Watch Decentralization (CWD).

Approach

Each Phase of the CWD is designed with largely the same progression of events, including 1) field testing, 2) service evaluation, 3) operations, and 4) service evaluation. Each operational Phase serves as a risk reduction for the subsequent Phase. Throughout the decentralization, risk is kept to a minimum while product quality is ensured. Prior to each Phase is a period of planning and development, including planning for training, field testing, operations, service evaluation, and software development.

Once plans for field testing have been approved, needed training completed, software/hardware developed, and communications enabled, a field test will assess the usefulness of equipment, products and communications. Service evaluation will parallel the field test, during which time needed adjustments can be made. On the basis of a favorable service evaluation report at the conclusion of the field test, a decision can be made to proceed with operations.

Once plans for operations have been approved, and necessary administrative procedures taken (WSOM Chapter updates, product change requests, customer notifications, etc.), operations for the Phase may proceed. [Beginning with Phase II, a period of practice watches also precedes operations.] Again, service evaluation parallels operations, and changes may be made to operational procedures should conditions warrant. A service evaluation report will be made six months after the commencement of each operational Phase. Based on a favorable report, recommendation would be made

to the Assistant Administrator for Weather Services (AA) for proceeding with the subsequent Phase.

Decentralization Teams

Teams of subject matter experts are addressing specific tasks associated with the CWD. Those teams address the following concepts:

<u>Science Application-</u>	training, field testing/assessing, risk reduction/operations
<u>Service Evaluation -</u>	coordination with Customer Advisory Panel and the Director's Advisory Committee on Forecast Operations (DACFO), service evaluation methodology
<u>Product Formatting -</u>	AWIPS product development, internal/external needs for coding and product content/structure.

Science Application.

A major element in creating a scientifically credible decentralization plan is to ensure that it includes sound mechanisms for training staff, conducting field tests, and conducting operations that serve as risk reductions for subsequent Phases. A Science Application Team consisting mainly of Science and Operations Officers (SOO) fills this role. Also part of this team is are representatives from SPC, COMET, the National Weather Service Training Center (NWSTC), and the NEXRAD Operational Support Facility Operations Training Branch (OTB). The team met in May of 1996 to begin structuring a CWD forecaster training plan. The team will generate a Training Plan by the Spring of 1997.

Service Evaluation.

Another critical element in providing the best convective watch products and services is collecting, evaluating and reacting to information on quality. A Service Evaluation Team will generate a plan for collecting, analyzing and responding to comments and suggestions from future WFOs, RFCs, NCEPs, WSH, and NWS external customers. This team will consist of Warning Coordination Meteorologists (WCM) and others who have demonstrated expertise in customer service. Service evaluation also may be performed by external bodies of expertise, including the AMS Committee on Weather Analysis and Forecasting and the Board of Certified Consulting Meteorologists, as appropriate. The Service Evaluation Team will work dynamically with the Customer Advisory Panel (II.C below), NWS Regions, and the DACFO to ensure internal and external input into the service evaluation process. The Service Evaluation and Science Application Teams will work closely on developing scientifically sound evaluation methodologies.

Product Format.

Product assembly, including both content and format, is a concern that requires specific treatment. Based partly on information obtained from the Service Evaluation Team and partly on knowledge of hardware/software needs, the Product Format Team will ensure convective watch products are transmitted, received and used effectively both internally and externally. Team members are recognized for their efforts in the area of product format and delivery.

Specific concerns include the relationship of convective watch products to AWIPS, Universal Geographic Codes (UGC), needs of customers regarding presentation of information, and communications technologies.

II. OPERATIONAL CONCEPT

A. Overview

In 1995, the NSSFC was administratively partitioned into the Aviation Weather Center (AWC) and the SPC, both components of NCEP. The convective watch responsibility resides with the SPC. Migrating the convective watch responsibility from the SPC to WFOs is complex due to changes occurring both in the NCEPs and field offices. NWS field office structure is changing from its two-tiered arrangement (NEXRAD Weather Service Forecast Offices--NWSFO and Weather Service Offices) to a single tiered structure (WFOs). The SPC has relocated from Kansas City, MO to Norman, OK and is gaining added guidance responsibilities. Because of the complexity of reassigning convective watch responsibility amid such dramatic changes, the convective watch program transfer will be performed incrementally. Each Phase will be preceded by a field test involving the SPC, field offices, National and Regional Headquarters, and NWS customers. The CWD will begin in 1997 and will be completed late in 2001. Upon its completion, WFOs will be issuing convective watches for their County Warning and Forecast Area (CWFA) using guidance from the SPC in conjunction with locally acquired information.

The primary purpose of the SPC is to serve the WFOs. SPC forecaster experience and expertise is of paramount importance to the success of the convective watch program. SPC will provide mesoscale guidance to WFOs on events the SPC monitors frequently but may be rare at an individual site. Also, SPC forecasters will keep WFO forecasters advised on areas of potential weather hazards through narrative alerting and status messages. In addition to serving WFOs, the suite of products and services from SPC will be useful to other National Centers, River Forecast Centers (RFC), and a wide variety of agencies outside the NWS. SPC products under development include a suite of guidance narratives, graphics and, later, gridded data. Many products will be non-technical or semi-technical, others will be highly technical in nature (as with gridded data and narrative discussions).

B. Incremental Phases

The CWD will be accomplished over four Phases. As stated above, each Phase will include a field test and operations, with service evaluations of each. Successful implementation of each Phase will mean that plans can move forward to implement the next Phase. While the Phase is ongoing, the next Phase's field testing can be conducted (a time line of planned activities is provided as Appendix B). Field testing, service evaluation, and operations are described in general within this document. More rigorous descriptions will be provided separately in subsequent documents prepared by decentralization teams (see above).

Phase I changes the convective watch geometry from a parallelogram to a polygon of not more than six (6) sides. The watch usually covers CWFAs of multiple NWSFOs and NEXRAD Weather Service Offices (NWSO). Phase I also

introduces a product issued by future WFOs (NWSFOs and NWSOs) to clear watches, called the Watch County Notification (WCN). It allows both external customers and the SPC to update their watch information based on Universal Geographic Codes (UGC). Successful implementation of Phase I is predicated on the availability of voice conferencing capability equivalent to the National Warning System (NAWAS) upgrade at SPC and future WFOs. It is also predicated on computer software at the SPC, NCEP Central Operations (NCO) and future WFOs to transmit and process watch information. Service evaluation of Phase I operations will enable NWS Senior Management to make a determination about proceeding with Phase II.

Phase II is a risk reduction for the initial decentralized environment. A subset of contiguous future WFOs (possessing AWIPS capabilities needed for performing convective watches) will participate. These offices will generate actual watches in real-time, supported by narrative, graphical, probabilistic guidance information and guidance watches from the SPC. Beginning Phase II is predicated on the availability of graphical and/or narrative, probabilistic convective watch guidance (including the guidance watch) from the SPC. It is also predicated on the successful implementation of AWIPS at participant WFOs with sufficient power to process data sets from multiple sources, to ingest and display graphical, probabilistic convective watch information from the SPC, to ingest and process a guidance watch from the SPC, to perform intersite coordination, and to communicate WFO watch products externally. Further, it is predicated on the successful completion by WFO forecasters of specific convective watch training, as designed by the Science Application Team (a detailed Training Plan will be released by OM in the Spring of 1997). Finally, it is predicated on the assurance by the meteorologist-in-charge of each WFO that the Office's forecasters are ready to assume watch responsibility. Evaluation of Phase II will supply information needed for NWS Senior Management to make a determination about proceeding with the initial decentralized environment (Phase III).

Phase III is the initial decentralized environment. WFOs generate convective watches based on graphical and/or narrative, probabilistic guidance from the SPC, a guidance watch product from the SPC, NCEP model guidance, and locally-generated diagnostic and observational information. Phase III (as with Phase II) is predicated on all of the Phase II requirements listed above for each CONUS WFO. Service evaluation of Phase III operations will enable NWS Senior Management to make a determination on proceeding with Phase IV.

Phase IV is the full implementation of the decentralized environment, using gridded, graphical, probabilistic guidance from NCEP (SPC, in particular). Gridded information flows into the WFO AWIPS, where product generators using locally adaptable parameters are used to create draft watch products. Phase IV is predicated on SPC developing appropriate gridded information that can be transmitted for processing by all AWIPS sites. Service evaluation will be ongoing, and iterative improvements in the convective watch program are expected in Phase IV and beyond.

C. Preliminary Internal/External Coordination

In addition to NWS participation, wholesale involvement of NWS customers is planned in order to provide feedback to optimize product utility. To facilitate such involvement and to ensure successful operations, OM has been coordinating the CWD with customers since the middle of 1994. Such coordination efforts include:

- Organizing a Customer Advisory Panel to work with OM directly and provide ongoing feedback throughout field testing and operations;
- Developing a working relationship with the American Meteorological Society (AMS) Board of Radio and Television Broadcasters through a working group that addresses media concerns regarding the NWS MAR;
- Presenting the CWD plan at national annual meetings of professional scientific societies, emergency management associations, hydrologic service organizations, and at NWS vendor and customer workshops;
- Publishing OM manuscripts that describe the CWD in national emergency management newsletters, commercial vendor newsletters, *The Critical Path*, the *Aware Report*, and in the *Bulletin* of the AMS; and,
- developing product formats with national electronic media.

Internal coordination efforts have included:

- Discussing the CWD concept at national Warning Coordination Meteorologist (WCM) Conferences and at Regional WCM workshops;
- Discussing the CWD at NWS forecaster symposiums;
- Discussing the CWD concept at WCM Training classes;
- Discussing the CWD concept with staff of the NSSFC (now SPC); and,
- Including Regional representatives, NCEP representatives, WCMs, Science Operations Officers (SOO), and MICs in the NWS internal watch decentralization working group and on decentralization teams.

D. Service Evaluation

A comprehensive Service Evaluation Plan will be generated by the Service Evaluation Team in the Spring of 1997. Service evaluation will address both field tests and operations. The specific nature of that evaluation will be expressed in the Service Evaluation Plan. In general, evaluation will be both objective and subjective, and will involve information supplied both by internal and external customers. External customers include:

- The media: national network and cable weather providers, local electronic media, media weather consultants;
- Private sector weather service providers;
- State and local emergency management;
- The aviation community;
- Marine customers, such as commercial fishing and travel/recreation associations; and,
- Other Federal agencies.

Internal customers include:

- Future WFOs;
- River Forecast Centers; and,
- National Centers.

A service evaluation report will be prepared six months after the beginning of each Phase's operations. A favorable summary report will be needed to recommend to the AA that the next Phase may begin.

III. PHASE I

A. Goals

The first phase of the CWD begins the process of migrating the convective watch responsibility from the SPC to WFOs. The NWS goals for Phase I are to:

- Increase the spatial resolution of convective watches by changing the configuration from a parallelogram to a multi-sided polygon;
- Enhance coordination and communication among field offices and between field offices and the SPC;
- Expand the convective watch redefining responsibility to include all future WFOs;
- Introduce field staff to a graphical interface by which to receive, edit, and transmit convective watch products;
- Introduce a new product to allow future WFOs to redefine watches and clear counties;
- Provide hourly updates to watch configurations on the National Radar Summary chart; and,
- Increase awareness and involvement of NWS field forecasters in the convective watch process.

These goals will be accomplished by redesigning the watch format, using the upgraded NAWAS-for-NWS voice communications network (or a similar voice communications technology), and using ZIP (Zone Identifier Program) PC software for field office processing of SPC watch information (or other PC based software accomplishing the same task).

B. Operational Concept

Future WFOs begin to gain familiarity and responsibility for the watch process in Phase I. The structure and content of convective watch products begins to change, and convective watch responsibilities begin to shift to future WFOs as well. SPC retains final authority regarding watch issuance, although future WFOs may include or exclude counties in a watch at their discretion. Future WFOs are directly involved in watch decision making, i.e., coordination on the spatial configuration of watch, and issuance of watch redefines and clearances.

C. Procedures

1. Phase I Field Test

The Phase I Field Test will be conducted using "canned" data on quiet weather days. The concept of the field test is to evaluate the use of communications hardware/software, product formats and utility, and coordination mechanics. The field test is not an effort to simulate actual watch conditions, when effects of workload and meteorological analysis will complicate coordination issues.

Preliminary Internal/External Coordination.

Not less than sixty days before the Phase I Field Test begins, OM will begin customer notification regarding distribution of field test products from SPC and future WFOs. Specific products and product format guidelines will be

provided via NWS, NWR and the Family of Services (FOS) distribution circuit. Instructions regarding customer feedback will be integral to the notification process.

- Meanwhile, OM will provide information to external customers by:
- The active involvement of the Customer Advisory Panel as it works with OM through the Service Evaluation Team, giving feedback during the Field Test (and throughout the CWD);
 - An active relationship with the AMS Board of Radio and Television Broadcasters via the Customer Advisory Panel, addressing media concerns regarding the NWS MAR; and,
 - Presenting progress reports on the CWD at national annual meetings of professional meteorological, hydrological, emergency management, media, academic, and commercial associations and at NWS customer workshops.

OM will keep NWS Regions, field staff, and NCEP informed through:

- Discussing the CWD concept at Regional and national WCM, SOO and other management conferences and workshops;
- Participating in forecaster symposiums;
- Discussing the CWD concept at WCM Training classes;
- Involving DACFO in the Service Evaluation process; and,
- Providing information through appropriate articles in *The Critical Path* and the *Aware Report*.

Conducting the Field Test.

The Field Test will be performed such as not to impact operations of the SPC or NWS field offices during convectively active days. It will last for a period of not less than 30 consecutive days. Basic procedures are as follows:

During the early morning hours, the SPC Lead Forecaster will declare a Phase I Field Test Day. Criteria for a Field Test Day include: 1) no severe convection forecast within the 48 contiguous states (CONUS), 2) no major hazardous non-convective weather systems expected to impact CONUS NWS field operations, and 3) all major model generating and processing facilities and all communications systems fully operational. Determination of suitable days for testing will be accomplished during coordination calls among NCEP Service Centers, including the Quality Assurance Branch of NCEP Central Operations.

Once a Phase I Field Test Day has been declared, NWS field offices will be notified by SPC via NAWAS. External customers will be notified by a Public Information Statement (AFOS Product Category PNS) from Weather Service Headquarters (WSH). This notification will be made as soon as practicable, but no later than 1200 UTC. Following the 1200 Universal Time (UTC) model run, the Phase I Field Test Day will be re-evaluated by the SPC Lead. Should the threat of severe convection or other hazardous weather be apparent based on 1200 UTC data, the Phase I Field Test Day will be canceled by the SPC Lead. Otherwise, plans to issue test watch products will continue. The SPC Lead may cancel a Phase I Field Test Day at his/her discretion based on changes to weather, facilities, hardware/software failure or communications.

Test Watch procedures begin with a coordination call from SPC to future WFOs, followed by the issuance of a suite of SPC test products, including:

- Preliminary Notification of a Watch (AFOS Product Category SAW);
- Public Watch Narrative (AFOS Product Category SEL); and,
- SPC County Listing for Watch (AFOS Product Category SEV).

The coordination call, initiated by SPC via NAWAS (or similar voice coordination/communication technology) and including all future WFOs affected by the watch, is made prior to issuance of any SPC watch product (Convective Outlooks are issued routinely and Mesoscale Convective Discussions may be issued as needed). During the Field Test, its purpose will be to inform future WFOs of the details regarding the test watch (in actual operations, such a coordination call will be to ensure that all field offices and SPC are in general agreement regarding the watch, both in its spatial and temporal delimiters). AWC may participate in the coordination call to remain aware of impending aviation weather hazards. Once consensus is achieved, SPC begins issuing the watch products.

SPC test products during the Field Test reflect their actual counterparts during Phase I operations. The SAW is a brief message to identify the type of watch, its valid times and corner points given in location identifiers and latitude/longitudes, hail size/maximum convective wind gusts, maximum thunderstorm tops and storm motion vector. While not a precise rendition of counties included in the watch, it provides customers with a first estimate of the threat area. The SEL is the public watch narrative that describes portions of states involved in the watch and gives details about the nature of the severe weather threat. The SEV is an NWS-internal product that is transmitted to future WFOs via AFOS. Its purpose is to allow ZIP PC software to graphically display the future WFOs' counties within the watch. Using ZIP, future WFOs may add or delete counties and produce the WCN for county redefining. The Convective Watch Status Message (Product Category WWA) is a terse, plain language technical discussion containing a brief nowcast and short term forecast assessing what will be done with a particular watch and why. A Watch Outline Update Message (Product Category WOU) provides NCO with updated and current outlines of convective watches, based on WCNs generated by WFOs. [NOTE: custom ZIP software has been prepared and is ready for use. However, use of other office PC software is allowed as long as the watch functionality yields the same products in the correct format.]

Future WFOs will be responsible for two convective watch products during the Phase I Field Test: the watch redefine and the watch clearance, both issued using Product Category WCN. The redefine is the public product in which future WFO's list counties included in the test watch (this differs from the SPC's SEV, in that the future WFO has applied their value adding to the SPC county list to produce the WCN). If counties are to be cleared from the watch, a WCN is used. [Note: AFOS Product Category WCN will not be used for actual watch clearance until Phase I operations.] As does the redefine, the watch clearance uses the Counties UGC to allow customers to clear portions of their watch files electronically. During the test watch, both products will

need to be tested to ensure that customers can receive and use them effectively.

The SPC will generate the test WOU every hour, as needed. The WOUs are generated without human intervention as SPC software scans for WCNs. The WCN will be ingested by SPC software, which remaps watch boundaries, if different from the original SAW, and creates a WOU to be transmitted immediately. That WOU will carry the same watch number and will be used to update the watch graphic on the hourly National Radar Summary test chart. The National Radar Summary test chart will be clearly identified as a test product.

All Field Test products will be clearly identified as TEST PRODUCTS.

The SPC will strive to prepare and issue test watch products for a minimum of four watches on each Field Test Day.

Service Evaluation.

Phase I Field Test evaluation of communications, product format and content, and coordination will give OM information to make any needed modifications for Phase I operations. Details about service evaluation methodologies will be provided in the Service Evaluation Plan, to be released by Spring 1997. Phase I Field Test Service Evaluation will parallel the Field Test. In general, future WFOs, the SPC, and external customers will be able to supply daily feedback to OM about the test. External customers have two mechanisms for providing feedback: 1) local customers will be invited to express their opinions and concerns to the future WFO WCM, who will forward such information to Regional MSDs. That information will be provided to the Service Evaluation Team; 2) customers may forward their reviews and comments to the chair of the Customer Advisory Panel, the name and phone number of whom will be provided in the notification period. The Customer Advisory Panel chair will forward comments to the Service Evaluation Team. Internal comments will be forwarded from future WFOs through the Director's Advisory Committee on Forecast Operations (DACFO), who will forward them to the Service Evaluation Team. The involvement of Regional MSDs in this process will be explored by the Service Evaluation Team.

During the course of the Field Test, changes to procedures may be made on the basis of customer and/or NWS field office/SPC suggestions. At the close of the Field Test, the Service Evaluation Team will recommend to the Director, OM, whether or not to proceed with Phase I operations.

2. Phase I Operations

Preliminary Internal/External Coordination.

Following approval to proceed with Phase I operations, OM will begin the administrative process of revising WSOM Chapter C-40, Severe Local Storm Watches, Warnings and Statements, to account for changes associated with Phase I. The revised C-40 should be delivered to NWS field offices not less than 60 days before implementation to allow forecaster familiarization. Meanwhile, customers will be notified not less than 60 days before implementation of Phase I operations via NWWS, NWR, and FOS. Although WCNs already will have

been approved for use, official notification of its national implementation will begin not less than 60 days before Phase I begins.

In addition, OM will continue to keep both internal and external customers informed through methodologies discussed in III.C.1.

Operations.

Implementation of Phase I will mean that the updated SPC products and field office products as introduced in the Phase I Field Test (see above) will become operational, and that pre-existing product formats and procedures will be discontinued. Examples of SPC products SAW (Preliminary Notification of a Watch), SEL (Severe Local Storm Public Watch Narrative), SEV (Severe Local Storm Internal Watch County Listing), WOU (Watch Outline Update Message) as well as future WFO WCN products (County Watch Notifications for redefine and watch clearance) follow as Figures 1 - 6.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. Although details of evaluation procedures are not yet available, generally the evaluation of Phase I Operations will occur in parallel with operations. The Service Evaluation Team, in conjunction with the Customer Advisory Panel, DACFO and NWS Regional MSDs, will coordinate the collection and analysis of both internal and external customer suggestions and comments. Six months after the beginning of Phase I operations, the Service Evaluation Team will report to the Director, OM, regarding their recommendations for proceeding with Phase II. The Director, OM, will convey his recommendation to the AA.

FIGURE 1: PRELIMINARY NOTIFICATION OF A WATCH (SAW)

MKCSAW2 ALL 270100;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
WWUS40 KMKC 261705
MKC AWW 261705

WW 102 TORNADO TX..AR..LA 261730Z - 270100Z
AVIATION COORDS..15NW TYR..10W FYV..5SW ARG..50SE PBF..30N MLU..25SW
SHV..15NW TYR. HAIL SURFACE AND ALOFT..2 INCHES. WIND GUSTS..60 KNOTS.
MAX TOPS..550. STORM MOTION VECTOR..25040.

FOR FURTHER DETAILS ... REFER TO MKCSEL2.

;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;

NNNN

FIGURE 2: SPC PUBLIC WATCH NARRATIVE (SEL)

MKCSEL2 ALL 270100;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
WWUS9 KMKC 261705
MKC WW 261705
TXZ000-ARZ000-LAZ000-270100-

BULLETIN - IMMEDIATE BROADCAST REQUESTED
TORNADO WATCH NUMBER 102
STORM PREDICTION CENTER NORMAN OK
1205 PM CDT SUN MAY 26 1996

THE STORM PREDICTION CENTER HAS ISSUED A TORNADO WATCH FOR PORTIONS
OF

NORTHEASTERN TEXAS
NORTHERN LOUISIANA
ARKANSAS

EFFECTIVE THIS SUNDAY AFTERNOON AND EVENING FROM 1230 PM UNTIL 7 PM CDT.
{option for enhanced wording to describe particularly dangerous situation}

A TORNADO WATCH MEANS CONDITIONS ARE FAVORABLE FOR SEVERE
THUNDERSTORMS AND TORNADOES IN AND CLOSE TO THE WATCH AREA.
THUNDERSTORMS IN THE WATCH AREA ALSO MAY PRODUCE {WIND GUSTS TO 70
MPH AND HAIL UP TO 2 INCHES IN DIAMETER {text variable according to situation}}.
PERSONS IN THESE AREAS SHOULD BE ON THE LOOKOUT FOR THREATENING
WEATHER CONDITIONS AND LISTEN FOR LATER STATEMENTS AND POSSIBLE
WARNINGS.

OTHER WATCH INFORMATION...{option for "THIS WATCH REPLACES WW NUMBER
XXXX."}

DISCUSSION ... RAPID THUNDERSTORM DEVELOPMENT IN NORTHEAST TEXAS
EXPECTED TO CONTINUE IN AXIS OF BEST SURFACE CONVERGENCE AND
INSTABILITY. THUNDERSTORMS EXPECTED TO BUILD NORTH AND MOVE EAST
SOUTHEAST ACROSS DEW POINT AXIS IN RESPONSE TO WEAK UPPER LEVEL
IMPULSE. AIR MASS UNSTABLE WITH LIFTED INDICES OF MINUS 10. FAVORABLE
VERTICAL WIND PROFILE WILL SUPPORT ISOLATED SUPERCELLS WITH POSSIBLE
TORNADOES.

AVIATION ... A FEW SEVERE THUNDERSTORMS AND TORNADOES WITH HAIL
SURFACE AND ALOFT TO 2 INCHES ... EXTREME TURBULENCE AND SURFACE WIND
GUSTS TO 60 KNOTS. A FEW CUMULONIMBI WITH MAXIMUM TOPS TO 550. STORM
MOTION VECTOR 25040.

SEE REDEFINING STATEMENTS SHVWCNSHV...TSAWCNTSA...LZKWCNLZK...
JANWCNJAN FOR COUNTIES INCLUDED IN THE WATCH AREA.
...GALWAY
;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
NNNN

FIGURE 3: SPC CONVECTIVE WATCH COUNTY LISTING (SEV):

MKCSEV2 ALL 270100;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
TTAAOO KMKC 261705

TORNADO WATCH #1002 HAS BEEN ISSUED BY THE STORM PREDICTION CENTER
EFFECTIVE THIS MONDAY AFTERNOON AND EVENING FROM 12:30 PM UNTIL 900 PM
CDT.

TX

. TEXAS COUNTIES INCLUDED ARE

BOWIE
FRANKLIN
RED RIVER
\$\$

CAMP
HOPKINS
TITUS

CASS
MORRIS
WOOD

AR

. ARKANSAS COUNTIES INCLUDED ARE

BAXTER
CARROLL
COLUMBIA
DALLAS
FULTON
HEMPSTEAD
INDEPENDENCE IZARD
JEFFERSON
LAWRENCE
LONOKE
MILLER
NEWTON
PIKE
PULASKI
SCOTT
SEVIER
UNION
YELL
\$\$

MONTGOMERY

SHARP

BOONE
CLARK
CONWAY
FAULKNER
GARLAND
HOT SPRING
JOHNSON
LITTLE RIVER
MADISON
NEVADA
OUACHITA
POLK
RANDOLPH
SEARCY
STONE
VAN BUREN

JACKSON

CALHOUN
CLEBURNE
CRAWFORD
FRANKLIN
GRANT
HOWARD
LAFAYETTE
LOGAN
MARION
PERRY
POPE
SALINE
SEBASTIAN
WHITE

LA

. LOUISIANA PARISHES INCLUDED ARE

BIENVILLE
CLAIBORNE
WEBSTER
\$\$

BOSSIER
DESOTO
UNION

CADDO
LINCOLN

;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
NNNN

FIGURE 4: Day One Convective Outlook (MKCSWODY1):

MKCSWODY1
ACUS1 KMKC 290621
SWODY1
MKC AC 290621

CONVECTIVE OUTLOOK...REF AFOS NMCGPH940.

VALID 291200Z - 301200Z

THERE IS A MODERATE RISK OF SEVERE THUNDERSTORMS TO THE RIGHT OF A LINE FROM MCW LSE VOK 30 SE OSH MKG AZO MIE BMG CGI 40 NE UNO 30 W TBN SZL P35 10 NE DSM MCW.

THERE IS A SLIGHT RISK OF SEVERE THUNDERSTORMS TO THE RIGHT OF A LINE FROM 20 E CSM 25 E P28 HUT SLN CNK OLU OTG MSP IMT ESC 25 ENE PLN 45 ESE OSC MFD CMH LEX BWG MEM PBF 45 ENE ACT ACT 25 SE BWD 30 NE SJT 45 W ABI 50 NE BGS 40 S CDS 20 E CSM.

GENERAL THUNDERSTORMS ARE FORECAST TO THE RIGHT OF A LINE FROM 65 SSW GDP 20 E CNM LBB 40 ESE AMA 55 W GAG 15 SE 1K5 15 NE CAO LVS ABQ GNT GUP 60 SSE U17 U17 4HV U28 50 WSW RWL CPR P05 PIR 50 SSE FAR HIB ELO 50 ENE ELO ...CONT... 20 WSW ERI YNG PKB 10 NNW JKL 35 NW MSL GWO 25 NW ESF 40 SSW CLL SAT DRT.

...SEVERE THUNDERSTORM FORECAST DISCUSSION...

--- SYNOPSIS ---

NO ETA MODEL DATA AVAILABLE FROM 29/00Z. HOWEVER...SYSTEM IS LIFTING OUT OF LONGWAVE POSITION SLIGHTLY FARTHER NORTH THAN PROGGED BY 28/12Z MODELS...AND THOUGH WELL INITIALIZED BY 29/00Z NGM...MAY TRACK LEFTWARD FROM ITS FORECAST. AS TROUGH LIFTS NORTHEASTWARD...STRONG DRY PUNCH AND LIFTING WILL OCCUR FROM NEAR SURFACE THROUGH MID LEVELS...AS COLD FRONT MOVES EASTWARD ACROSS OUTLOOK AREA. NORTHWARD MODEL BIAS HAS BEEN OBSERVED TO A MUCH GREATER DEGREE BEFORE WITH SIMILAR EJECTIONS OF SOUTHWESTERN CONUS CYCLONES...AND MODELS WERE VERY CONSISTENT WITH ONE ANOTHER...SO MODEL PERFORMANCE WITH THIS PATTERN SO FAR APPEARS REMARKABLY GOOD. THIS CONFIDENCE COMBINED WITH THE LATEST SATELLITE/RAOB TRENDS JUSTIFY ONLY MINOR ADJUSTMENTS TO PREVIOUS DAY 2 SEVERE THREAT AREAS.

--- MODERATE RISK AND ADJACENT PORTIONS OF MIDWEST ---

VAD/PROFILER DATA SHOWS 50-60 KT LLJ ALREADY UNDERWAY OVER WESTERN/NORTHWESTERN TX AND WESTERN OK...WHICH WILL SHIFT/SPREAD NORTHEASTWARD ACROSS KS/MO/IA BY BEGINNING OF PERIOD.

RESULTING STRONG LOW LEVEL THETA-E ADVECTION WILL AID DESTABILIZATION AND INCREASE VERTICAL SHEAR PROFILES BEFORE STRONGEST LIFT AND MID-LEVEL COOLING REACH REGION IN ADVANCE OF EJECTING MID/UPR LEVEL TROUGH. MODIFIED FORECAST SOUNDINGS SHOW NEARLY MOIST LAPSE RATES THROUGH A DEEP LAYER AHEAD OF DRY SLOT...CAPE RANGING FROM 500-1500 J/KG AND -1 TO -3 LI...AND INSTABILITY GENERALLY DECREASING WITH NORTHWARD EXTENT OVER MIDDLE MISSISSIPPI VALLEY AND GREAT LAKES REGION. DYNAMIC AND KINEMATIC SUPPORT ARE QUITE INTENSE. STRONG GRADIENT FLOW AT ALL LEVELS ASSOCIATED WITH TROUGH AND marginally sufficient DESTABILIZATION SHOULD YIELD A SIGNIFICANT CONVECTIVE WIND DAMAGE THREAT OVER MID/UPR MISSISSIPPI VALLEY AND PORTIONS OF SOUTHERN/WESTERN GREAT LAKES REGION. ALSO...PROGGED STORM-RELATIVE

VERTICAL SHEAR PROFILES SUPPORT TORNADIC SUPERCELLS...BUT SCOPE AND LONGEVITY OF TORNADO THREAT IS STILL IN QUESTION DUE TO LIMITED INSTABILITY.

A PUBLIC SEVERE WEATHER OUTLOOK...UNDER AFOS HEADER PWOMKC...MAY BE REQUIRED LATER THIS MORNING IF DEVELOPMENT OF SEVERE THREAT PROCEEDS AS EXPECTED.

--- SOUTHERN/SOUTHWESTERN SLIGHT RISK...TX/OK/AR ---
STRONG...POSSIBLY SEVERE CONVECTION WILL BE ONGOING AT BEGINNING OF PERIOD OVER WESTERN PORTIONS OF THIS REGION...ALONG LEADING EDGE OF STRONGEST MID-LEVEL COLD ADVECTION AND DRY SLOT. SEVERE SQUALL LINE...POSSIBLY WITH A FEW EMBEDDED BOW ECHOES AND LEWPS PRODUCING DAMAGING WINDS...ARE POSSIBLE. THIS CONVECTION WILL MOVE EASTWARD AND NORTHEASTWARD ACROSS THE REGION DURING THIS MORNING AND EARLY AFTERNOON. ALTHOUGH LOW-LEVEL INSTABILITY WILL INCREASE OVER MUCH OF THIS AREA DURING THE AFTERNOON...THIS WILL BE COUNTERACTED SIGNIFICANTLY BY WEAKENING TRENDS IN DEEP-LAYER FLOW AND LAPSE RATES ALOFT AS TROUGH MOVES TO THE NORTH-NORTHEAST.

..EDWARDS.. 10/29/96

...GENERAL THUNDERSTORM FORECAST DISCUSSION...

--- CENTRAL ROCKIES AND ADJACENT HIGH PLAINS ---
WIDELY SCATTERED THUNDERSTORMS ARE POSSIBLE...PRIMARILY UNDER COLD CORE ASSOCIATED WITH MID/UPR LEVEL TROUGH. ACTIVITY SHOULD SHIFT FROM CENTRAL ROCKIES EARLY IN PERIOD ACROSS CENTRAL PLAINS IN CLOSE CORRELATION TO TRACK OF STRONGEST MID-LEVEL VORTICITY FIELD.
..EDWARDS.. 10/29/96

FIGURE 5: Day Two Convective Outlook (MKCSWODY2):

MKCSWODY2
ACUS2 KMKC 291737
SWODY2
MKC AC 291737

2ND DAY SEVERE CONVECTIVE OUTLOOK...REF AFOS NMCGPH98O.
GENERAL THUNDERSTORMS NOT INCLUDED.

VALID 301200Z - 311200Z

THERE IS A SLIGHT RISK OF SEVERE THUNDERSTORMS TO THE RIGHT OF A LINE
FROM 20 NNE PBG PSF EWR NHK SHD MGW PIT ERI.

...NY/PA/MD/NORTHERN VA...

VIGOROUS UPPER TROUGH CURRENTLY OVER THE CENTRAL PLAINS IS FORECAST
TO SWEEP NORTHEASTWARD ACROSS THE GREAT LAKES REGION AND INTO
SOUTHEASTERN CANADA ON WEDNESDAY. MEANWHILE...ASSOCIATED SURFACE
COLD FRONT WILL EXTEND ACROSS WESTERN NY/PA AT BEGINNING OF
PERIOD...MOVING INTO WESTERN NEW ENGLAND BY EVENING. ATMOSPHERE
AHEAD OF FRONT IS FORECAST TO BE ONLY marginally UNSTABLE WITH LIFTED
INDICES OF 0 TO -1. HOWEVER...90-100 KT WESTERLY MID-LEVEL WINDS AND
STRONG CONVERGENCE ALONG FRONT SUGGESTS POTENTIAL FOR NARROW LINE
OF LOW-TOPPED SHOWERS AND THUNDERSTORMS CAPABLE OF PRODUCING
DAMAGING WINDS.

...SOUTHERN CA...

UPPER LOW OFF THE CENTRAL CALIFORNIA COAST IS ALSO FORECAST TO TRACK
SOUTHEASTWARD INTO CALIFORNIA BY TOMORROW AFTERNOON. ATMOSPHERE
SHOULD BE marginally UNSTABLE IN VICINITY OF SYSTEM WITH SCATTERED
THUNDERSTORMS POSSIBLE...AND SOME THREAT OF ISOLATED STORMS
PRODUCING DAMAGING WINDS. HOWEVER...WILL NOT OUTLOOK AT THIS TIME DUE
TO UNCERTAINTY OF TIMING AND RATHER WEAK LOW-LEVEL WINDS.

..HART.. 10/29/96

FIGURE 6: MESOSCALE CONVECTIVE DISCUSSION (MCD):

MKCSWOMCD ALL;303,1009 311,0965 322,0947 315,0947 302,0947 283,1009;
ACUS3 KMKC 251748
MKC MCD 251748

SPC MESOSCALE DISCUSSION FOR SOUTHEASTERN TEXAS
CONCERNING...SEVERE THUNDERSTORM POTENTIAL...

CONVECTION CONTINUES TO SLOWLY INCREASE OVER PARTS OF SOUTHEASTERN TEXAS AND ADJACENT GULF WATERS OVER THE PAST FEW HOURS. WAVE IMAGERY INDICATED A SHORT WAVE TROUGH WITH ASSOCIATED DRY MID LEVEL AIRMASS WAS NEARING THE TEXAS COASTAL BEND AT THIS MOMENT...WHERE THE AIRMASS HAD BECOME MODERATELY UNSTABLE. CURRENT SURFACE BASED LIFTED INDICES RANGED FROM -3 TO -6. LATEST DOPPLER IMAGERY FROM CORPUS CHRISTI AND HOUSTON-GALVESTON INDICATED ACTIVITY NEARING THE TEXAS COAST SOUTHEAST OF MATAGORDA COUNTY HAS PERSISTENT WEAK MID LEVEL ROTATION. CURRENT VAD WIND PROFILES SUPPORT EARLIER MODELS IN INCREASING UPPER LEVEL SOUTHWESTERLY FLOW ASSOCIATED WITH SHORT WAVE WHICH WILL LIKEWISE INCREASE DEEP LAYER SHEAR ACROSS THIS REGION OVER THE NEXT SEVERAL HOURS.

WARM FRONT LOCATED ACROSS SOUTHERN TEXAS/NORTHWESTERN GULF OF MEXICO SHOULD LIFT NORTHWARD THIS AFTERNOON...WHILE NUMEROUS MESOSCALE COASTAL/OUTFLOW BOUNDARIES PERSIST ACROSS THIS AREA. THIS SHOULD ALLOW CONVECTION TO BECOME NEAR SURFACE BASED...INCREASING POTENTIAL FOR ISOLATED TORNADOES.

IF THUNDERSTORMS CONTINUE TO INCREASE...A WEATHER WATCH MAY BE NEEDED IN THE NEXT HOUR OR SO.

..EVANS.. 10/25/96

FIGURE 7: SPC WATCH STATUS REPORT (WWA)

MKCWWAMKC ALL 250100;285,0974 295,0975 305,0933 300,0933 293,0933272,0974;
WWUS8 KMKC 242305
MKC WWA 242305

STATUS REPORT ON WW NUMBER 1093

SUPERCELLS DEVELOPING IN NORTHEASTERN TEXAS CONTINUE HEADING 250/16 KTS..TOWARD SOUTHWESTERN ARKANSAS AND NORTHWESTERN LOUISIANA. RECENT VOLUME SCANS HAVE SHOWN STRONG AND INCREASING MID-LEVEL ROTATIONAL VELOCITIES WITH THESE STORMS AND A TORNADO WAS REPORTED IN BOWIE COUNTY IN THE PAST HOUR.

APPEARS THAT THE SEVERE THREAT FOR THE NEXT SEVERAL HOURS WILL BE CONFINED TO EXTREME NORTHEASTERN TEXAS...SOUTHERN ARKANSAS... AND NORTHERN LOUISIANA. WARM FRONTAL BOUNDARY NOT EXPECTED TO PUSH MUCH FARTHER NORTH OVER ARKANSAS THIS AFTERNOON. ENHANCED SURFACE COOL POCKET DUE TO EFFECTS OF PREVIOUS CONVECTION AND FRONTOGENESIS OVER WESTERN LA WILL KEEP BEST INSTABILITY CONFINED TO THESE AREAS.

WEATHER WATCH WILL CONTINUE THROUGH 0100 UTC EXPIRATION TIME. WARM SECTOR WILL BE CLOSELY MONITORED DURING THE REST OF THE EVENING FOR SIGNS OF NORTHWARD ADVANCEMENT.

..CRAVEN.. 10/24/97

NNNN

FIGURE 8: WATCH OUTLINE UPDATE MESSAGE (WOU)

MKCWOUMKC ALL 270100;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
WWUS# KMKC 242330
MKC WOU 242330

WW 102 TORNADO

AVIATION COORDS.. 15NW TYR..10W FYV..5SW ARG..50SE PBF..30N MLU..25SW
SHV..15NW TYR.

\$\$

ARC005-009-013-015-019-023-027-029-033-039-045-047-049-051-053-057-059-061-063-065-
067-069-073-075-081-083-085-087-089-091-097-099-101-103-109-113-115-119-121-125-127-
129-131-133-135-137-139-141-145-149-LAC013-015-017-027-031-061-111-119-TXC037-063-
067-159-223-343-387-449-499-242300-

TX

. TEXAS COUNTIES INCLUDED ARE

BOWIE
FRANKLIN
RED RIVER

CAMP
HOPKINS
TITUS

CASS
MORRIS
WOOD

\$\$

AR

. ARKANSAS COUNTIES INCLUDED ARE

BAXTER
CARROLL
COLUMBIA
DALLAS
FULTON
HEMPSTEAD
INDEPENDENCE
JEFFERSON
LAWRENCE
LONOKE
MILLER
NEWTON
PIKE
PULASKI
SCOTT
SEVIER
UNION
YELL

BOONE
CLARK
CONWAY
FAULKNER
GARLAND
HOT SPRING
IZARD
JOHNSON
LITTLE RIVER
MADISON
MONTGOMERY
OUACHITA
POLK
RANDOLPH
SEARCY
SHARP
VAN BUREN

CALHOUN
CLEBURNE
CRAWFORD
FRANKLIN
GRANT
HOWARD
JACKSON
LAFAYETTE
LOGAN
MARION
NEVADA
PERRY
POPE
SALINE
SEBASTIAN
STONE
WHITE

\$\$

LA

. LOUISIANA PARISHES INCLUDED ARE

BIENVILLE
CLAIBORNE
WEBSTER

BOSSIER
DESOTO
UNION

CADDO
LINCOLN

\$\$

;325,0953 361,0933 361,0910 340,0910 330,0920 320,0940;
NNNN

IV. PHASE II

Phase II is the risk reduction for Phase III operations. Phase II will involve a subset of future WFOs and will result in operational convective watch products in real time. Once the concept of Phase III operations has been successfully demonstrated by Phase II, the balance of WFOs can begin preparing for Phase III operations.

A. Goals

This Phase of the CWD tests and assesses the initial decentralized convective watch environment. The NWS goals for Phase II are to:

- Shift original convective watch responsibility from the SPC to a cluster of future WFOs;
- Demonstrate that convective watches can be refined both in space and time by WFOs; and,
- Demonstrate the viability of integrating graphical and/or narrative, probabilistic guidance and guidance watches from SPC via AWIPS into the convective watch process.

These goals will be accomplished within the Phase II area by shifting the mechanism for WFO data acquisition and processing from AFOS and remote sensing processors to an integrated AWIPS data access, display and processing system; by utilizing guidance generating capabilities at SPC; and, by using advanced coordination and communications capabilities associated with AWIPS. To take advantage of enhancements to the availability of data, it will be essential that WFO forecasters in the Phase II area be fully trained in sub-synoptic and mesoscale convection by having completed all training requirements as in the Training Plan.

B. Operational Concept

Phase II is designed to be a risk reduction to test and assess the viability of assigning convective watch responsibility to WFOs. In the Phase II area, future WFOs will have achieved Stage II staffing, and will have attained scientific and operational training (as developed by the Science Application Team) sufficient to accommodate the requirements placed on the WFO by the convective watch program. SPC will produce guidance to support WFO convective watches that will include graphical and/or narrative, probabilistic information and guidance watches. While future WFOs in the Phase II area are issuing watches, future WFOs in the rest of the contiguous U.S. will continue operating in Phase I. SPC will continue to provide Phase I products and services for the entire CONUS (i.e., guidance, Preliminary Notifications of Watches (SAW), Public Watch Narrative, discussions, etc.) while also providing their Phase II product suite for the Phase II area.

Conducting Phase I and Phase II operations side-by-side will require substantial coordination and reformatting of SPC and future WFO products. Coordination between Phase II WFOs and SPC will be essential prior to generation of any watches. It is likely that Phase I future WFOs adjacent to Phase II WFOs will need to monitor such coordination and, when the severe convective threat includes both Phase I and Phase II areas, coordination should involve all affected WFOs, future WFOs, and the SPC. Phase I products will have a "look and feel" similar to that of the Phase II products, so

external customers will perceive little distinction between the formats of the two. Specifically, the Phase I SPC convective watch narrative and the future WFO county watch redefine, together, will have a similar appearance to the WFO generated Phase II convective watch. This consistency will help customers along the Phase I/Phase II boundary to read and understand the products.

In the Phase II area, each future WFO's assumption of watch responsibility will be predicated on the MIC's assurance of operational readiness (based on training guidelines developed by the Science Application Team), following acceptance of AWIPS with capabilities identified in section VII.C.1 and a period of forecaster development including issuance of practice watches.

C. Procedures

1. Phase II Field Test

A subset of future WFOs possessing AWIPS capabilities identified in section VII.C.1. will field test the watch-by-WFO concept. The Field Test will test coordination mechanics, communications, guidance, and products, and will allow internal and external customers an opportunity to provide suggestions for improvement. The Phase II Field Test likely will use "canned" data on quiet weather days. The purpose of the field test is to ensure viability of communications, AWIPS hardware and software, SPC guidance and product formatters, and WFO operational processes. Also, the field test is to ensure both internal and external customers are satisfied with the product suite as received.

Preliminary Internal/External Coordination.

Not less than sixty days before the Phase II Field Test begins, OM will begin customer notification regarding distribution of field test products from SPC and future WFOs. Specific products and product format guidelines will be provided via NWWS, NWR and the Family of Services (FOS) distribution circuit. Instructions regarding customer feedback will be crucial to the notification process. Meanwhile, OM will provide information to NWS Regions, field personnel and customers through the many contacts identified in section III.C.1.

Conducting the Field Test.

While the details of the field test have not yet been finalized, in general the Phase II Field Test will use "canned" SPC guidance along with all upgraded hardware and software intended for Phase III operations. It is likely that the field test area will consist of the CWFAs of 5 contiguous future WFOs within the earliest delivery area of AWIPS. The field test is likely to last for a period of not less than 30 days.

Based on the canned data, SPC or a WFO will identify a potentially severe convective situation developing, and the SPC or WFO Lead Forecaster will initiate a coordination call. Such a "call" will use a combination of AWIPS Intersite Coordination and NAWAS (or its equivalent). [Although WFOs are solely responsible for their watch, the purpose of coordination is to allow SPC the opportunity to share guidance, to keep adjacent offices and the SPC informed about convective watches, and to try and resolve any spatial or temporal discontinuities between the products of adjacent WFOs.]

SPC convective watch products issued for the Phase II field test reflect their Phase II and Phase III operational counterparts. New SPC severe convection products new for Phase II will include:

- Short-term Hazardous Weather Guidance Product-Severe Weather (HWG) - A technical discussion, in plain language (except for universally understood contractions), describing expected severe convective activity (slight, moderate, and high risk or in probabilistic format) across the CONUS. The product also gives meteorological reasoning. The hazardous weather guidance provides a severe weather outlook for day 1 in 6-hour intervals, and for day 2 in twelve hour intervals. It is a routine product updated every six hours.
- Guidance Watch - Using Product Category SEV, this NWS-internal message from SPC to WFOs provides a skeletal draft convective watch with valid times and counties to be included. Should the WFO have little or no time to address the watch, it will be sufficiently complete to be retransmitted from the WFO as the watch. Otherwise, it will serve as a draft. The SPC forecaster will prepare graphical guidance describing an area of potentially severe convection. Based on SPC forecaster input, software at SPC will prepare the SEVs describing expected convection within each affected WFO CWFA. The WFO forecaster will use AWIPS to edit the SEV for spatial and temporal distribution and for narrative completeness if time permits. AWIPS will rename the SEV to WCN, the Public Watch Narrative.

Since AWIPS has Watch/Warning/Advisory product formatters to generate convective watches, ZIP PC software will not be used in the Phase II Field Test (although on non-Field Test days the Phase II future WFOs will use ZIP PC software in their normal Phase I operations).

Products issued by future WFOs during the Phase II Field Test will be similar to their final Phase II and Phase III counterparts. Future WFOs will use AWIPS to generate public watch narrative WCN, either from the SEV or in free text from the AWIPS formatter. The WCN should contain all encoding, e.g., WMO Headers and UGCs, to ensure proper dissemination to customers. Because the WCN watch narrative generated at the future WFO will include a county listing, the WCN for county redefine no longer will be required.

WFOs also shall continue to be responsible for the WCN for watch clearance. During the Phase II Field Test, WFOs will need to test both the WCN for watch issuance and for watch clearance to ensure their customers can receive and use them.

The SPC shall be responsible for monitoring convective watches nationally for the added purpose of supporting AWC and NCEP Central Operations (NCO). As WFO watch data is ingested by SPC, boundaries are mapped and combined with any adjacent watches in the form of a polygon. Based on future-WFO WCNs, the SPC will update those polygons (using computer software to create the watch outline update--product category WOU), and that update information will be provided to NCO to update watch polygons on the National Radar Summary Chart. AWC will use watch information and updates in the course of developing their suite of aviation weather products.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the Phase II Field Test. The basic structure of service evaluation for the Phase II Field Test is similar to that identified for the Phase I Field Test (see section III.C.1). At the close of the Field Test, the Service Evaluation Team will recommend to the Director, OM, whether or not to proceed with Phase II operations.

Practice Watches.

Following approval by the Director, OM, to proceed with Phase II operations, Phase II WFOs may begin preparing practice watches. The Science Application Team will identify the methodology by which such practice watches are to be conducted and evaluated. The purpose will be to familiarize and train forecasters in the watch process, similar to how NWSO forecasters are being familiarized and trained in other WFO forecast functions. Generally, forecast teams (two forecasters per shift) will perform forecast/watch/warning operations, with the short-term forecaster performing the watch function until warning conditions develop. While warning conditions are present, the long-term forecaster performs the watch function.

2. Phase II Operations**Preliminary Internal/External Coordination.**

Coordinating Phase II, both within the NWS and with customers, will be crucial to its success. Fundamental changes in products and data flow will mean major modifications to the way watch information is created and processed. OM will continue to involve NWS field offices, Regions, National Centers, and other Headquarters offices in the process of migrating convective watch responsibility from the SPC to WFOs. To document Phase II procedures, an Operations Manual Letter (OML) to WSOM Chapter C-40 will be written to accommodate the coexistence of Phase I and Phase II. The C-40 OML will provide detailed guidance for conducting Phase II operations. The C-40 OML will be distributed not less than 60 days before Phase II begins. Wholesale involvement of NWS external customers will continue through the Customer Advisory Panel. The Customer Advisory Panel will meet before implementation of Phase II to make final arrangements to receive and use WFO generated watches and watch related products effectively. A critical aspect, especially for customers addressing national concerns, is being able to accommodate Phase I and Phase II watch information concurrently.

Not less than 60 days before Phase II operations, OM will begin customer notification regarding distribution of new products from SPC and future WFOs. Specific product format guidelines will be provided via NWWS, NWR and the FOS distribution circuit. Also not less than 60 days prior to Phase II, customers will be notified of the changes to public watch product WCN and the introduction of SPC Phase II guidance narratives and graphics (see Operations, below).

Meanwhile, OM will continue to exchange information with NWS Regions and field personnel through the many contacts and activities identified in III.C.I.

Phase II Operations.

Future WFOs involved in Phase II will use SPC guidance with all upgraded hardware and software intended for Phase II (and Phase III). Phase II operations will provide actual WFO based watches within each WFO's CWFA. The Phase II area will consist of the CWFAs of 5 contiguous future WFOs within the earliest delivery of AWIPS possessing all of the capabilities needed to perform the watch function.

A scheme to number, or uniquely identify, each WFO convective watch is being developed between the NWS Product Format Team and the Customer Advisory Panel. Put simply, watches are numbered:

cccTTxxx, where

ccc is the WFO identifier, TT is the watch type, and xxx is the WFO watch number. This is not to be confused with the Product Inventory List (PIL). The eight-digit alphanumeric includes a two-letter watch type, i.e., TO for tornado, SV for severe thunderstorm, WS for winter storm, FF for flash flood, FL for flood, etc. The xxx WFO watch numbers are consecutive, by year, for all types of WFO generated watches.

The WFO public watch narrative sample identified as Figure 11 displays such a numbering scheme.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the beginning of Phase II operations. Although details of evaluation procedures are not yet available, it is envisioned that the internal and external evaluation process will parallel operations. The Service Evaluation Team, in conjunction with the Customer Advisory Panel, DACFO and NWS Regional MSDs, will coordinate the collection and analysis of both internal and external customer suggestions and comments. Six months after the beginning of Phase II operations, the Service Evaluation Team will report to the Director, OM, regarding their recommendations for proceeding with Phase III. The Director, OM, will convey his recommendation to the AA.

V. PHASE III

A. Goals

This phase of the CWD completes the migration of convective watch responsibility from the SPC to WFOs. The NWS goals for Phase III are to:

- Complete the shift of original forecast responsibility for the convective watch program from the SPC to WFOs;
- Refine convective watches both in space and time, based on information available to WFOs; and,
- Integrate graphical and/or narrative, probabilistic guidance and guidance watches from SPC via AWIPS capabilities into the convective watch process on a national scale.

These goals will be accomplished by shifting the mechanism for WFO data acquisition and processing from AFOS/PC and remote sensing processors to an integrated AWIPS data access, display and processing system; by utilizing guidance generating capabilities at SPC; and, by using advanced coordination and communications capabilities associated with AWIPS. To take advantage of advances in the availability of data, it will be essential that WFO forecasters be fully trained in sub-synoptic and mesoscale convection by having completed all training requirements as defined in the Training Plan.

B. Operational Concept

Phase III is designed to complete the migration of the convective watch responsibility from SPC to WFOs. WFOs staff will have completed scientific and operational training (see above) needed to conduct the watch program. SPC will generate graphical and/or narrative, probabilistic guidance and guidance watches to support the WFO watch program. Phase III serves as a bridge to allow all WFOs to accept convective watch responsibilities while awaiting the delivery of gridded guidance from SPC.

C. Procedures

1. Phase III Field Test

The Science Application Team will provide a Phase III Field Test Plan in the Fall of 1998. WFOs not associated with Phase II operations will test coordination mechanics, communications, guidance, and products. The field test will involve internal and external customers who can provide suggestions for improvement. The Phase III Field Test likely will use "canned" data on quiet weather days. The purpose of the field test is to ensure viability of communications, AWIPS hardware and software, SPC guidance and product formatters, and WFO operational processes. Also, the Field Test is to ensure both internal and external customers are satisfied with the product suite as received.

Preliminary Internal/External Coordination.

Sixty days before the Phase III Field Test begins, OM will begin customer notification regarding distribution of Field Test products from SPC and WFOs. Specific products and product format guidelines will be provided via NWWS, NWR and the Family of Services (FOS) distribution circuit. Instructions regarding customer feedback will be crucial to the notification process.

Meanwhile, OM will provide information to NWS Regions, field personnel and customers through the many contacts identified in section III.C.1. and through other mechanisms as appropriate.

Conducting the Field Test.

The Phase III Field Test will use "canned" SPC guidance along with all upgraded hardware and software intended for Phase III operations. The field test is likely to last for a period of not less than 30 days.

Based on the canned data, including canned SPC guidance, the SPC (or a WFO) will identify a potentially severe convective situation developing. Either the SPC or WFO Lead Forecaster will initiate a coordination call. Such a "call" will use a combination of AWIPS Intersite Coordination and NAWAS. [Although WFOs are solely responsible for their watch, coordination gives the SPC a chance to share guidance and provides WFOs a forum to keep adjacent offices informed about convective watches. Using such coordination, offices may resolve any spatial or temporal discontinuities between their products.]

SPC convective watch products issued for the Phase III Field Test reflect their Phase II counterparts. See section IV.C.1 for descriptions of these products.

AWIPS capabilities will be critical to WFO use of SPC guidance. SPC graphical and/or narrative guidance sent to WFOs will be ingested by AWIPS, where forecasters will be able to use the SPC guidance to create their watches. Through AWIPS, WFO forecasters will have access to all NCEP information, local data, and remote sensing information needed to generate watch products.

The SPC continues its responsibility for generating information to maintain current watch graphics on the National Radar Summary chart. As watches are ingested by SPC software, boundaries are mapped and combined with any adjacent watches. Information (product WOU) provided to NCO by SPC will keep the National Radar Summary chart depiction of watches current.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the Phase III Field Test. The structure of the Phase III Field Test Service Evaluation is similar to that identified in section III.C.1. During the course of the Field Test, changes to procedures may be made on the basis of customer and/or NWS field office/SPC suggestions. At the close of the Field Test, the Service Evaluation Team will recommend to the Director, OM, whether or not to proceed with Phase III operations.

Practice Watches.

Following approval by the Director, OM, to proceed with Phase III operations, WFOs not already doing convective watches may begin preparing practice watches. The Science Application Team will identify the methodology by which such practice watches are to be conducted and evaluated. The purpose will be to familiarize and train forecasters in the watch process, similar to

how NWSO forecasters are being familiarized and trained in other WFO forecast processes. Generally, forecast teams (two forecasters per shift) will perform forecast/ watch/warning operations, with the short-term forecaster performing the watch function until warning conditions develop. While warning conditions are present, the long-term forecaster performs the watch function.

2. Phase III Operations

Preliminary Internal/External Coordination.

Since WSOM Chapter C-40 was rewritten to accommodate changes associated with Phase II, the only changes needed will be to terminate Phase I operations. Meanwhile, customers will be notified not less than 60 days before national implementation of Phase III begins via NWWS, NWR, and FOS or other appropriate communications media.

Wholesale involvement of NWS external customers will continue through the Customer Advisory Panel. The Customer Advisory Panel will meet before implementation of Phase III to make final arrangements to receive and use WFO generated watches and watch related products effectively.

Not less than sixty days before Phase III Operations, OM will begin customer notification regarding distribution of products from SPC and WFOs. Specific product format guidelines will be provided via NWWS, NWR and the FOS distribution circuit. Also not less than 60 days prior to Phase III, customers will be notified of the changes to public watch narrative WCN and the introduction of SPC mesoscale guidance narratives and graphics (see Operations, below). Meanwhile, OM will continue to exchange information with NWS Regions and field personnel through the many contacts and activities identified in III.C.1.

Operations.

National implementation of Phase III will mean that all SPC and field office products from Phase I will be terminated. This changeover will take place nationally, with all WFOs outside the Phase II area assuming the convective watch function at once. The implementation will be based on AWIPS acceptance and the demonstration of WFO forecaster watch proficiency, as determined by WFO MICs under guidelines established by the Science Application Team.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the beginning of Phase III operations. Although details of evaluation procedures are not yet available, it is envisioned that the internal and external evaluation process will parallel operations. The Service Evaluation Team, in conjunction with the Customer Advisory Panel, DACFO and NWS Regional MSDs, will coordinate the collection and analysis of both internal and external customer suggestions and comments. Six months after the beginning of Phase III operations, the Service Evaluation Team will report to the Director, OM, regarding their recommendations for proceeding with Phase IV. The Director, OM, will convey his recommendation to the AA.

Figure 9: SPC Generated Hazardous Weather Guidance Product

MKCSCODY1
ACUS1 KMKC 250607
SCODY1
MKC AC 250607

SEVERE CONVECTIVE OUTLOOK...REF DY1SCO1 DY1SCO2 DY1SCO3 DY1SCO4

VALID 251200Z - 251800Z

THERE IS A SLIGHT RISK OF SEVERE THUNDERSTORMS TO THE RIGHT OF A LINE FROM 35 NE CRP 35 SSE CLL 45 W LFK 35 SSW SHV 45 ESE SHV 25 SSE MLU 15 W MCB 25 SE BVE.

...SEVERE THUNDERSTORM FORECAST DISCUSSION...

SATELLITE IMAGERY INDICATES MID/UPPER LEVEL VORTICITY MAXIMUM OVER NORTH CENTRAL MEXICO AS STRONG MID/UPPER LEVEL TROUGH CONTINUES TO DEEPEN AND MOVE SSE ACROSS THE NORTHWESTERN U.S. THUNDERSTORMS CONTINUE TO DEVELOP OVER THE NORTHWESTERN GULF OF MEXICO WITHIN MOISTURE PLUME THAT EXTENDS SSW ACROSS EASTERN AREAS OF MEXICO. LATEST SURFACE DATA INDICATES WARM FRONTAL BOUNDARY THAT EXTENDS EASTWARD ACROSS EXTREME SOUTHERN TEXAS ACROSS THE NORTHERN PORTIONS OF THE GULF OF MEXICO SOUTH OF THE SOUTHEAST TEXAS/SOUTHERN LOUISIANA COASTAL AREAS.

AS LARGE TROUGH CONTINUES TO DIG SOUTHWARD DURING THE PERIOD... MID/UPPER LEVEL SHORT WAVE/ASSOCIATED VORTICITY MAXIMUM IS EXPECTED TO BE FORCED NORTHEASTWARD ACROSS SOUTHERN TEXAS AND THE SOUTHEAST TEXAS COAST. LOW LEVEL FLOW IS EXPECTED TO INCREASE NORTHWARD ACROSS LOUISIANA ENHANCING WARM FRONTAL BOUNDARY...AND WE WOULD EXPECT AS LOW LEVEL FLOW INCREASES WARM AIR ADVECTION WILL DESTABILIZE AIRMASS. LIFTED INDICES COULD DROP TO BETWEEN -4 AND -6 DURING THE AFTERNOON AS 50 TO 60 KNOT MID LEVEL JET EXTENDS ACROSS NORTHEAST TEXAS. RIGHT REAR QUADRANT OF ENTRANCE REGION OF MID LEVEL JET COMBINED WITH SOUTHERLY LOW LEVEL FLOW IS EXPECTED TO ESTABLISH FAVORABLE VERTICAL SHEAR PROFILE FOR STRONG THUNDERSTORMS.
..MCCARTHY.. 10/25/96

VALID 251800Z - 260000Z
(same as above for next 6-hr period)

VALID 260000Z - 270600Z
(same as above for next 6-hr period)

VALID 270600Z - 271200Z
(same as above for next 6-hr period)

Figure 10: SPC Generated Guidance Watch

MKCSEVLOT :303,1009 322,0947 322 090 302 947 302,0947 283,1009
TTAAOO KMKC 241704
SEV####
ILC007-031-037-043-053-063-075-089-091-093-097-097-103-105-111-141-197-201-INC007-
039-049-073-085-089-091-099-111-127-131-141-149-181-242300-

INTERNAL TORNADO WATCH GUIDANCE
STORM PREDICTION CENTER NORMAN OK
1204 PM EDT (1104 AM EST/CDT) SAT OCT 24 1998

...THIS PRODUCT IS FOR INTERNAL GUIDANCE ONLY...

THE STORM PREDICTION CENTER HAS RECOMMENDED A TORNADO WATCH FOR THIS SATURDAY AFTERNOON AND EVENING UNTIL 6 PM EDT (5 PM EST/CDT) FOR PORTIONS OF:

NORTHERN AND EASTERN ILLINOIS
NORTHERN INDIANA
EXTREME SOUTHERN LOWER MICHIGAN
AND ADJACENT COASTAL WATERS OF LAKE MICHIGAN.

...THIS IS A PARTICULARLY DANGEROUS SITUATION WITH THE POSSIBILITY OF A FEW STRONG AND/OR VIOLENT TORNADOES...

A TORNADO WATCH MEANS THAT CONDITIONS ARE FAVORABLE FOR SEVERE THUNDERSTORMS AND TORNADOES IN AND CLOSE TO THE WATCH AREA. THUNDERSTORMS IN THE WATCH AREA MAY PRODUCE WIND GUSTS TO 70 MPH...HAIL UP TO 1 3/4 INCHES IN DIAMETER...AND TORNADOES. PERSONS IN AND CLOSE TO THE WATCH AREA SHOULD BE ON THE LOOKOUT FOR THREATENING WEATHER CONDITIONS AND LISTEN FOR LATER STATEMENTS AND POSSIBLE WARNINGS.

THE FOLLOWING COUNTIES IN THE LOT WARNING AREA ARE INCLUDED IN THE WATCH:

IN NORTHEASTERN ILLINOIS			
BOONE	COOK	DE KALB	DU PAGE
FORD	GRUNDY	IROQUOIS	KANE
KANKAKEE	KENDALL	LAKE	LA SALLE
LEE	LIVINGSTON	MCHENRY	OGLE
WILL	WINNEBAGO		

IN NORTHWESTERN INDIANA			
BENTON	ELKHART	FULTON	JASPER
KOSCIUSKO	LAKE	LA PORTE	MARSHALL
NEWTON	PORTER	PULASKI	ST JOSEPH
STARKE	WHITE		

AND ADJACENT COASTAL WATERS OF LAKE MICHIGAN

DISCUSSION...THUNDERSTORMS HAVE BEGUN TO DEVELOP RAPIDLY ACROSS NORTHERN AND CENTRAL ILLINOIS IN RESPONSE TO A STRONG SHORT WAVE APPROACHING THE AREA. AXIS OF EXTREME INSTABILITY WITH CAPE GREATER THAN 4000 J/KG AND STRONG SHEAR FAVOR SUPERCCELLS WITH POSSIBLE TORNADOES DURING THE REMAINDER OF THE AFTERNOON.

AVIATION...A FEW SEVERE THUNDERSTORMS AND TORNADOES WITH HAIL SURFACE AND ALOFT TO 2 INCHES...EXTREME TURBULENCE AND SURFACE WIND GUSTS TO 70 KNOTS. A FEW CUMULONIMBI WITH MAXIMUM TOPS TO 600. STORM MOTION VECTOR 25035.

SEE LOCAL WATCH PRODUCTS FOR OFFICIAL INFORMATION.

...GALWAY

:303,1009 322,0947 322 090 302 947 302,0947 283,1009

NNNN

******NOTE ADDITIONAL GUIDANCE WATCHES WOULD HAVE TO BE ISSUED FOR DVN, IND, AND GRR******

Figure 11: WFO Generated Convective Watch Narrative

CRWWCNCRW
TTAA00 KCRW DDHHMM

SEVERE THUNDERSTORM WATCH NUMBER CRWSV046
NATIONAL WEATHER SERVICE CHARLESTON WV
1045 AM EDT SAT OCT 17 1998

WVC999-172000-

\$\$

THE NATIONAL WEATHER SERVICE HAS ISSUED A SEVERE THUNDERSTORM WATCH FOR THIS SATURDAY MORNING AND AFTERNOON. THE WATCH IS VALID FROM 11 AM UNTIL 4 PM EDT FOR PORTIONS OF EASTERN KENTUCKY...EXTREME SOUTHERN AND SOUTHEAST OHIO...AND A LARGE PORTION OF WEST VIRGINIA.

{NARRATIVE STATING THE PROBLEM INSERTED BY FORECASTER}

WVC005-011-013-020-024-026-029-031-OHC066-067-075-076-083-087-KYC101-103-105-172000-

THE FOLLOWING COUNTIES ARE INCLUDED IN THE WATCH:

IN EASTERN KENTUCKY

BOYD	CARTER	GREENUP
LAWRENCE		

IN EXTREME SOUTHERN OHIO

GALLIA	JACKSON	LAWRENCE
MEIGS	VINTON	

IN SOUTHEAST OHIO

ATHENS	MORGAN	PERRY
WASHINGTON		

IN NORTH CENTRAL WEST VIRGINIA

CALHOUN	DODRIDGE	GLIMER
HARRISON	LEWIS	

IN NORTHWESTERN WEST VIRGINIA

PLEASANTS	RITCHIE	TYLER
WIRT	WOOD	

IN THE SOUTHWEST COAL FIELD OF WEST VIRGINIA

BOONE	LOGAN	MINGO
-------	-------	-------

IN WEST CENTRAL WEST VIRGINIA

KANAWHA	PUTNAM	ROANE
---------	--------	-------

IN WESTERN WEST VIRGINIA

CABELL	JACKSON	LINCOLN
MASON	WAYNE.	

THE FOLLOWING CITIES ARE INCLUDED IN THE WATCH:
(LIST OF CITIES)

\$\$

(CALL TO ACTION STATEMENT)

NNNN

Figure 12: WFO Watch Clearance Notification

CRWWCNCRW
TTAA00 KCRW DDHHMM

WATCH CLEARANCE NOTIFICATION
NATIONAL WEATHER SERVICE CHARLESTON WV
1048 AM EDT SAT OCT 17 1998

KYC101-103-105-107-DDHHMM-
SEVERE THUNDERSTORM WATCH NUMBER CRWSV046 IS NO LONGER IN EFFECT
FOR
EASTERN KENTUCKY

COUNTIES CLEARED FROM THE WATCH INCLUDE
BOYD CARTER GREENUP
LAWRENCE.

\$\$

WVC005-007-009-011-013-020-024-026-029-031-OHC066-067-075-076-083-087-DDHHMM-
A SEVERE THUNDERSTORM WATCH REMAINS IN EFFECT FOR
EXTREME SOUTHERN OHIO

GALLIA	JACKSON	LAWRENCE
MEIGS	VINTON	

SOUTHEAST OHIO		
ATHENS	MORGAN	PERRY
WASHINGTON		

NORTH CENTRAL WEST VIRGINIA		
CALHOUN	DODRIDGE	GLIMER
HARRISON	LEWIS	

NORTHWESTERN WEST VIRGINIA		
PLEASANTS	RITCHIE	TYLER
WIRT	WOOD	

THE SOUTHWEST COAL FIELD OF WEST VIRGINIA		
BOONE	LOGAN	MINGO

WEST CENTRAL WEST VIRGINIA		
KANAWHA	PUTNAM	ROANE

WESTERN WEST VIRGINIA		
CABELL	JACKSON	LINCOLN
MASON	WAYNE.	

THE FOLLOWING CITIES ARE INCLUDED IN THE WATCH:
WV: CHARLESTON, GRANTSVILLE, HUNTINGTON, MADISON, ST. MARYS.

\$\$

(forecaster input for basis of action)

NNNN

VI. PHASE IV

A. Goals

The final phase of the CWD, called Phase IV, applies NCEP gridded data to the WFO convective watch program. The NWS goals for Phase IV are to:

- Integrate gridded guidance from SPC into the WFO convective watch process; and,
- Ensure the end-to-end forecast process involving both NCEPs and WFOs achieves a convective watch program of the highest accuracy that the state of the science allows.

These goals will be accomplished by ensuring that operational products and forecaster training reflect the state of the science. SPC is tasked to develop gridded, graphical, probabilistic guidance of convective potential. Such guidance is to be sent to WFOs, where AWIPS product generators using locally adaptable parameters will be used to create draft watch products. In consonance with SPC's efforts to develop gridded information, WFO forecaster training efforts should continue as described in the Training Plan.

B. Operational Concept

Phase IV completes the CWD by placing SPC gridded information into AWIPS and ensuring WFO forecasters can generate high quality convective watches. Using the diversity of information delivered through AWIPS, and based on extensive training in sub-synoptic scale, mesoscale, and storm scale convective processes, WFOs will be able to produce high quality convective watches.

C. Procedures

1. Phase IV Field Test

The Phase IV Field Test Plan, provided in the Fall of 1999, will involve internal and external customers who can provide suggestions for improvement. The Phase IV Field Test likely will use "canned" data on quiet weather days. WFOs will test the use of AWIPS in conjunction with SPC gridded guidance and other related products. Also, the field test is to ensure both internal and external customers are satisfied with the product suite as received.

Preliminary Internal/External Coordination.

Not less than 60 days before the Phase IV Field Test begins, OM will begin customer notification regarding distribution of field test products from SPC and WFOs. Specific products and product format guidelines will be provided via NWWS, NWR and the Family of Services (FOS) distribution circuit. Instructions regarding customer feedback will be crucial to the notification process.

Meanwhile, OM will provide information to NWS Regions, field personnel and customers through the many contacts identified in section 111.C.1. and through other mechanisms as appropriate.

The change from graphical and/or narrative SPC guidance to gridded information will mean major modifications to the way watch information is created and processed. OM will continue to involve WFOs, Regions, National Centers, and other Headquarters offices in the development of convective watch gridded information.

Conducting the Field Test.

The Phase IV Field Test will use "canned" SPC guidance along with all upgraded hardware and software intended for Phase IV operations. The field test is likely to last for a period of not less than 30 days. Based on the canned data, including canned SPC gridded guidance, the SPC or a WFO will identify a potentially severe situation developing. Either the SPC or WFO Lead Forecaster will initiate a coordination call using a combination of AWIPS Intersite Coordination and NAWAS (or its equivalent).

Many of the SPC convective watch products issued for the Phase IV Field Test reflect their Phase II and Phase III counterparts. However, gridded guidance issued during the Field Test reflects its counterpart during Phase IV operations. SPC will ship the gridded guidance, and WFOs will use AWIPS to receive and process the guidance; then, to generate watch related products. See section IV.C.1 for descriptions of these watch related products.

AWIPS capabilities will be critical to WFO use of SPC guidance. SPC gridded, graphical and/or narrative guidance sent to WFOs will be ingested by AWIPS, where forecasters will be able to use the SPC guidance to create their watches. Through AWIPS, WFO forecasters will have access to all NCEP information, local data, and remote sensing information needed to generate watch products.

The SPC will continue to be responsible for monitoring convective watches nationally for the purpose of generating information to maintain current watch graphics on the National Radar Summary chart.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the Phase IV Field Test. The structure of the Phase IV Field Test Service Evaluation is similar to that identified in section III.C.1. During the course of the Field Test, changes to procedures may be made on the basis of customer and/or NWS field office/SPC suggestions. At the close of the Field Test, the Service Evaluation Team will recommend to the Director, OM, whether or not to proceed with Phase IV operations.

2. Phase IV Operations

Internal/External Coordination.

WSOM Chapter C-40 was updated to accommodate changes associated with Phase III, so the only changes needed will be to add gridded data to any product suite. Meanwhile, customers will be notified not less than 60 days

before national implementation of Phase IV begins via NWWS, NWR, and FOS or other appropriate communications media.

Wholesale involvement of NWS external customers will continue through the Customer Advisory Panel. The Customer Advisory Panel will meet before implementation of Phase IV to make final arrangements to receive and use WFO generated watches and watch related products effectively.

Not less than 60 days before Phase IV Operations, OM will begin customer notification regarding distribution of products from SPC and WFOs. Specific product format guidelines will be provided via NWWS, NWR and the FOS distribution circuit. Also not less than 60 days prior to Phase IV, customers will be notified of changes to SPC mesoscale guidance.

Meanwhile, OM will continue to exchange information with NWS Regions and field personnel through the many contacts and activities identified in III.C.1.

Operations.

The Science Application Team will provide a Phase IV Plan not less than 60 days before the implementation of Phase IV. National implementation of Phase IV will mean that SPC gridded data will be introduced operationally. This changeover will take place nationally, with all WFOs beginning to use SPC gridded data operationally all at once. Operational considerations in the WFO structure should not change appreciably.

Service Evaluation.

Details regarding Service Evaluation will appear in a Service Evaluation Plan, to be released in the Spring of 1997. An update to that Plan will be prepared, if needed, not less than 60 days before the beginning of Phase IV operations. Although details of evaluation procedures are not yet available, it is envisioned that the internal and external evaluation process will parallel operations. The Service Evaluation Team, in conjunction with the Customer Advisory Panel, DACFO and NWS Regional MSDs, will coordinate the collection and analysis of both internal and external customer suggestions and comments. Six months after the beginning of Phase IV operations, the Service Evaluation Team will report to the Director, OM, regarding their recommendations for enhancing Phase IV. As necessary, the Director, OM, will convey his recommendation to the AA.

VII. TRANSITION STEPS

A. Phase I (Polygon Watches by Multiple NWSFO/NWSO Area)

1. Technologies Required:

At SPC -

- Software to display watch redefine and watch clearance information from future WFOs and generate WOU for use by NCO

Action: J. Schaefer (SPC)

Due: February 28, 1997

At NEXRAD Weather Service Forecast Office (NWSFO)/NEXRAD Weather Service Offices

(NWSO) -

- PC Hardware with communications link into AFOS network

Action: NWS Regional MSDs to ensure capability -

Done

- PC ZIP software with custom capability to ingest and display graphic rendition of SPC product SEV; to make graphical modifications of SEV and produce WSFO redefine product; to edit redefine product as needed to create watch clearance product.

Action: Gary Garnet, SOO NWSO Grand Rapids.

Done

- NAWAS Upgrade hardware for voice communications, allowing "party line" capability among NWS field offices, including National Centers, with on-demand bridging capability into State and National emergency management contact points.

Action: OM11 (Bill Alexander and Rainer Dombrowsky) - Due: June 1, 1997

2. Staffing:

- At SPC - Full staffing relocated to Norman, OK
- At NWSFOs - Full Stage 1 Staffing
- At NWSOs - Full Stage 1 Staffing

3. Training/Planning Required:

At SPC -

- NAWAS training materials to be delivered to SPC

Action: OM11 (Bill Alexander/Rainer Dombrowsky) -

Due: June 1, 1997

- SPC test watch products for field test

Action: J. Schaefer, SPC -

Due: May 15, 1997

At NWSFO/NWSOs -

- NAWAS training material to be delivered to WSFO/NWSOs-

Action: OM11 (Bill Alexander/Rainer Dombrowsky) Due: June 1, 1997

- Watch Decentralization Service Evaluation Plan

Action: Service Evaluation Team/W. Lerner

Due: April 30, 1997

- Forecaster Training Plan

Action: Science Application Team/E. Jacks

Due: April 30, 1997

- Phase I Product Format Plan

Action: Product Format Team/M. Heathfield

Due: April 30, 1997

- Phase I Operations Plan

Action: Science Applications Team/E. Jacks Due: September 30, 1997

4. Service Backup:

At SPC -

Operational backup of SPC will be accomplished by Air Force Global Weather Center (AFGWC).

At NWSFO/NWSOs -

Service backup to be accomplished as described in Weather Service Operations Manual (WSOM) Chapter J-03 and as specified in appropriate Regional Operational Manual Letters (ROMLs).

5. Forecast Coordination:

- SPC coordination with other National Centers should be accomplished via NAWAS and video teleconference on an as-needed basis to ensure consistency of operational products.
- SPC coordination with NWSFO/NWSOs should be accomplished via NAWAS voice communications prior to issuance of any watch product.
- NWSFO/NWSO coordination via NAWAS with other NWSFO/NWSOs should be performed when counties bordering adjacent NWSFO/NWSO are in SPC watch area (as identified by SPC watch product SEV) and are to be deleted using watch redefine or cleared using watch clearance.

B. Phase II (Watches by Future WFO in Designated Area)

1. Technologies Required:

At Phase II Future WFOs

- AWIPS Capabilities: The following are CWDs requirements that already have been identified in Techniques Specifications Packages:
 - Local Data Acquisition and Dissemination (LDAD) Functionality
 - Intersite Coordination
 - Interactive Computer Worded Forecast and Watch/Warning/Advisory software
 - Status Area Weather Update capability

2. Staffing:

At SPC - No change from Phase I

At Phase II WFOs - Initial Stage II

3. Training/Planning Required:

- Forecaster Training at Phase II Future WFOs - See Training Plan
- Phase II Field Test Plan
Action: Science Application Team/E. Jacks - Due: February 28, 1998
- Phase II Operations Plan
Action: Science Application Team/E. Jacks -Due: September 30, 1998

4. Service Backup:

At SPC - No change from Phase I operations

At WFOs -

WSOM J-03, WFO Backup Operations, rewritten to incorporate service backup changes associated with MAR reorganization and technologies in Phase II WFO area.

Action: OM11 (Bill Alexander) -

Due: July 1998

5. Operational Coordination:

At SPC and Phase 11 Future WFOs-

- SPC coordination with other National Centers should be accomplished via NAWAS, AWIPS Intersite Coordination, and video teleconference on an as-needed basis to ensure consistency of operational products.
- SPC coordination with Phase II Future WFOs should be accomplished via NAWAS voice communications and/or AWIPS Intersite Coordination. Such coordination should occur at the discretion of either SPC or WFO(s) either to assess the potential for severe convection or to help resolve discrepancies among WFOs.
- Phase II Future WFO coordination via NAWAS and/or AWIPS Intersite Coordination with other Phase 11 Future WFOs should be performed when counties bordering adjacent WFOs are subject to conditions that may favor a convective watch. Such coordination also may involve SPC.

Details regarding operational forecast coordination will be specified in rewrite to WSOM C-45, Service Coordination, to be implemented December 1997. Action: OM11 (R. Dombrowsky).

C. Phase III (Watches by WFO)

1. Technologies Required:

No change from Phase II, except implemented nationally

2. Staffing:

At SPC - No change from Phase II

At WFOs - Stage II staffing

3. Training/Planning:

At SPC - No change from Phase II

At WFOs - No change from Phase 11, except for all WFOs

- Phase III Field Test Plan

Action: Science Application Team/E. Jacks -

Due: February 28, 1999

- Phase III Operations Plan

Action: Science Applications Team/E. Jacks -

Due: September 30, 1999

4. Service Backup:

At SPC - No change from Phase II

At WFOs-

WSOM J-03, WFO Backup Operations, updated to delete non-MAR operations.

Action: OM11 (Bill Alexander) -

Due: September 1999

5. Forecast Coordination:

No change from Phase 11, except implemented nationally

D. Phase IV (Watches by WFO Using Gridded Guidance)

1. Technologies Required:

- At SPC - Gridded convective watch guidance capability

Action: J. Schaefer -

Due: March 2000

2. Staffing:

No change from Phase III

3. Training/Planning:

At SPC - No change from Phase III

At WFOs -

To support the convective watch program, forecasters will need to be proficient in using AWIPS adaptable parameters to generate convective watches. Preparation of guidelines.

Action: SPC/OM (J. Schaefer/Bill Alexander) -

Due: March 2000

SOOs will be responsible for ensuring WFO forecasters are sufficiently trained on AWIPS software through implementation of OM/SPC generated guidelines.

- Phase IV Field Test Plan

Action: Science Application Team/E. Jacks - Due: February 29, 2000

- Phase IV Operations Plan

Action: Science Application Team/E. Jacks - Due: September 30, 2000

4. Service Backup:

No change from Phase III

5. Forecast Coordination:

No change from Phase III

Appendix A: Timetable of CWD activities:

Pre-Phase I:

Activity	Date
Customer Workshop I	March 1996
Science App. Decent. Team Mtg	May 28-31 1996
Customer Workshop II	December 1996
Watch Decentralization Plan (Final)	January 1997
ZIP software in field/beta-tested	February 1997
Service Evaluation Plan	March 1997
Product Format Plan	March 1997
NAWAS upgrade complete	March 1997
Forecaster Training Plan	April 1997

Phase I:

Phase I Field Test	Jun 97
Phase I Field Test Svc Eval	Jun - Jul 97
OM Decision to implement Phase I	Jul 97
Phase I	Dec 97 - Nov 99
Phase I Svc Eval	Dec 97 - Jun 98
AA Decision to proceed w/ Phase II	Jul 98

Phase II:

Phase II Field Test	May - Jun 98
Phase II Field Test Svc Eval	May - Jul 98
OM Decision to implement Phase II	Jul 98
Phase II Practice Watches	Jul - Nov 98
Phase II	Dec 98 - Nov 99
Phase II Svc Evaluation	Dec 98 - Jun 99
AA Decision to proceed w/ Phase III	July 99

Phase III:

Phase III Field Test	May - Jun 99
Phase III Field Test Svc Eval	May - Jul 99
OM Decision to implement Phase III	Jul 99
Phase III Practice Watches	Jul - Nov 99
Phase III	Dec 99 - Nov 00
Phase III Svc Eval	Dec 99 - Jun 00
AA Decision to proceed w/ Phase IV	Jul 00

Phase IV:

Phase IV Field Test	May - Jun 00
Phase IV Field Test Svc Eval	May - Jul 00
OM Decision to implement Phase IV	Jul 00
Phase IV	Dec 00 -
Phase IV Svc Eval	Dec 00 -

Appendix B: WATCH DECENTRALIZATION TRAINING Proposed Requisites and Delivery Mechanisms

TRAINING MATERIAL	DELIVERY MECHANISM	DEMONSTRATION CRITERIA
+++++		
Complete:		
- COMET Convective Track CBL modules	CBL, CD-ROM, printed hardcopy	Forecaster reports completion to SOO/MIC
- NWSTC "Thunderstorm" handout		
- OSF "Supercell Explorer" CD-ROM		
- OSF "Guide to Recognizing and Diagnosing Mesocyclones"		
- Read specific papers recommended by Team		
Demonstrate proficiency with use of gridded model, digital satellite and WSR-88D data	One-on-one by SOO, FPs	Subjective evaluation by SOO
Demonstrate proficiency with SHARP workstation	One-on-one by SOO, FPs	Subjective evaluation by SOO
Know how to produce composite charts on synoptic-scale and mesoscale processes	Audio graphics, case studies developed for WWW use	To be developed by Team
Demonstrate knowledge of local climatology	Maps, charts, one-on-one Communication on-site	Subjective evaluation by SOO
Demonstrate working knowledge of SPC guidance	SPC-generated summary (already available)	Short quiz to be developed by Team, available on WWW
Demonstrate knowledge of logistical procedures associated with Watch issuance	Summary to be developed by Team	Short quiz to be developed by Team, available on WWW